

WHAT IS CLAIMED IS:

1. A catalyst dumping device for unloading used catalyst from an inside of a reactor, comprising:

5 a catalyst dumping-out member extending perpendicularly inside the reactor and further extending from an inside to an outside of the reactor, the catalyst dumping-out member having a falling passage of the used catalyst smashed thereinside;

10 wherein an upper end of the catalyst dumping-out member is located adjacent to an uppermost surface of the catalyst.

2. The catalyst dumping device according to Claim 1, wherein the catalyst dumping-out member includes a plurality of pipe members connected with each other.

15 3. The catalyst dumping device according to Claim 2, wherein the pipe members are connected by fitting an insert provided to a lower bulge of a pipe member to a fitting portion provided to an upper bulge of a pairing pipe member, the insert including an inner ring portion formed successively to an inner diameter of the pipe member, an outer ring portion consecutive to an outer diameter and a groove portion formed between the ring portions, the fitting portion including first abutting portion formed to the lower bulge of the pairing pipe member capable of being abutted to an upper side of the inner ring portion, a protrusion protruding downward from the first abutting portion and
20 second abutting portion capable of being abutted to an upper side of the outer ring portion.

4. The catalyst dumping device according to Claim 2, wherein a connecting portion of the respective pipe members is provided with a sealing member for preventing process fluid for catalyst from flowing into an inside of the pipe members from outside by virtue of a pressure difference between the inside and outside of the pipe members.
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5. The catalyst dumping device according to Claim 2, wherein a high-density member having larger density than the catalyst is filled inside the respective pipe members for preventing process fluid for catalyst from flowing into an inside of the pipe members from an outside by virtue of a pressure
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difference between the inside and the outside of the pipe members.

6. The catalyst dumping device according to Claim 2, wherein the respective pipe members are provided with a lifting member for suspending
5 and lifting the respective pipe members.

7. The catalyst dumping device according to Claim 1, wherein a nozzle is provided approximately at an extended position of the catalyst dumping-out member for the catalyst dumping-out member to pass through.
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8. A catalyst dumping method for unloading used catalyst from an inside of a reactor, comprising the steps of:

providing a catalyst dumping-out member inside the reactor extending perpendicularly inside the reactor and further extending from the inside of the reactor to an outside of the reactor, the catalyst dumping-out member having a
15 plurality of pipe members connected with each other provided with falling passage for a smashed catalyst thereinside;

smashing the catalyst;

throwing the smashed catalyst into an uppermost pipe member;

20 while continuing the smashing and throwing steps, detaching the

connected pipe members sequentially from an upper pipe member in accordance with lowering of a level of an upper surface of the catalyst; and

continuing to throw the smashed catalyst into the pipe member of corresponding level of the upper surface of the catalyst, thereby unloading the
25 catalyst inside the reactor.

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